

In the Claims:

Please amend Claim 8 as indicated below. The status of the claims is as follows:

1. (Previously Presented) A device interface apparatus having a physical layer, a link layer, a transport layer and an application layer, for transferring commands and data in packet format by serial transmission between a device and a host, the interface apparatus comprising:

a receive FIFO disposed at the transport layer and configured to store on a first-in first-out basis a command packet or a data packet received from the host via the physical layer and the link layer;

a command detector configured to detect the command packet stored in the receive FIFO during data transfer and to output a command detection signal;

a receive task file register disposed at the application layer and configured to load the command content of the receive FIFO;

a send task file register disposed at the application layer and configured to load a command or data for packet sending;

a send FIFO disposed at the transport layer and configured to store on a first-in first-out basis the content of the send task file register, the send FIFO causing a command packet or a data packet to be sent to the host via the link layer and the physical layer;

an available time generator configured to generate an available time for receiving another command packet from the host during data transfer; and

a mid-transfer command processor, when a command packet is received from the host during the available time, configured to suspend the data transfer to decode the received command packet for execution of processing and thereafter to resume the data transfer;

wherein the mid-transfer command processor comprises a firmware implemented by execution of a program, and wherein

the mid-transfer command processor comprises:

a suspend processor, when the command detection signal is output from the command detector for the command packet received during the available time and stored in the receive FIFO, configured to suspend the currently executed data transfer and to save parameters upon the suspension into a memory;

a command decoder configured to decode the command content loaded from the receive FIFO into the receive task file register;

a data transfer abort module, when abortion of the data transfer is determined by the command decoder, configured to discard the currently executed command packet and the saved parameters and to terminate the data transfer; and

a transfer resume module, when continuance of the data transfer is determined by the command decoder, configured to throw the command content of the receive task file register into a command queue, to store command reception response information into the send FIFO and sending a command reception response packet to the

host via the link layer and the physical layer, the transfer resume module configured to thereafter relate the suspend of the data transfer and to set the saved parameters to resume the data transfer.

2. (Cancelled)

3. (Previously Presented) The interface apparatus according to claim 1, wherein

the available time generator is configured to detect completion of the transfer of the data packet sent to or received from the host and to generate the available time upon detecting the completion.

4. (Previously Presented) The interface apparatus according to claim 1, wherein

the transfer resume module is configured to rewrite the data stored in the send FIFO upon suspending of data transfer into response data to the received command packet for transfer of a command reception response packet, the transfer resume module is configured to thereafter set the saved parameters to resume the data transfer.

5. (Previously Presented) A device interface apparatus for transferring commands and data in packet format by serial transmission between a device and a host, the interface apparatus comprising:

a receive FIFO configured to store on a first-in first-out basis a command packet or a data packet received from the host;

a command detector configured to detect the command packet stored in the receive FIFO during data transfer and to output a command detection signal;

a receive task file register configured to load the command content of the receive FIFO;

a send task file register configured to load a command or data for packet sending;

a send FIFO configured to store on a first-in first-out basis the content of the send task file register and to cause a command packet or a data packet to be sent to the host;

an available time generator configured to generate an available time for receiving another command packet from the host during data transfer; and

a mid-transfer command processor, when a command packet is received from the host during the available time, configured to suspend the data transfer to decode the received command packet for execution of processing and thereafter to resume the data transfer;

wherein the mid-transfer command processing unit is firmware implemented by execution of a program, and wherein the mid-transfer command processor comprises:

a suspend processor, when the command detection signal is output from the command detector for the command packet received during the available time

and stored in the receive FIFO, configured to suspend the currently executed data transfer and to save parameters upon the suspension into a memory;

a command decoder configured to decode the command content loaded from the receive FIFO into the receive task file register;

a data transfer abort module, when abortion of the data transfer is determined by the command decoder, configured to discard the currently executed command and the saved parameters and to terminate the data transfer; and

a transfer resume module, when continuance of the data transfer is determined by the command decoder, configured to throw the command content of the receive task file register into a command queue, to store command reception response information into the send FIFO and to send a command reception response packet to the host, the transfer resume module thereafter configured to release the suspend of the data transfer and to set the saved parameters to resume the data transfer.

6. (Cancelled)

7. (Previously Presented) The interface apparatus according to claim 5, wherein

the available time generator is configured to detect completion of the transfer of the data packet sent to or received from the host and to generate the available time upon detecting the completion.

8. (Currently Amended) The interface apparatus according to claim 5, wherein

the transfer resume module is configured to rewrite the data stored in the send FIFO upon suspending of data transfer into response data to the received command for transfer of a command reception response packet, the transfer resume ~~unit~~module thereafter configured to set the saved parameters to resume the data transfer.

9. (Previously Presented) A packet transfer method for a device interface having a physical layer, a link layer, a transport layer and an application layer, the device interface transferring commands and data in packet format by serial transmission between a device and a host, the device interface including:

a receive FIFO disposed at the transport layer and configured to store on a first-in first-out basis a command packet or a data packet received from the host via the physical layer and the link layer;

a command detector configured to detect the command packet stored in the receive FIFO during data transfer and to output a command detection signal;

a receive task file register disposed at the application layer and configured to load the command content of the receive FIFO;

a send task file register disposed at the application layer and configured to load a command or data for packet sending; and

a send FIFO disposed at the transport layer and configured to store on a first-in first-out basis the content of the send task file register, the send FIFO causing

a command packet or a data packet to be sent to the host via the link layer and the physical layer;

the packet transfer method comprising:

an available time generation step generating an available time for receiving another command packet from the host during data transfer; and

a mid-transfer command processing step, when a command packet is received from the host during the available time, configured to suspend the data transfer to decode the received command packet for execution of processing and thereafter to resume the data transfer;

wherein the mid-transfer command processing step comprises:

a suspend processing step, when the command detection signal is output from the command detector for the command packet received during the available time and stored in the receive FIFO, configured to suspend the currently executed data transfer and to save parameters upon the suspension into a memory;

a command decode step configured to decode the command content loaded from the receive FIFO into the receive task file register;

a data transfer abort step, when abortion of the data transfer is determined by the command decode step, configured to discard the currently executed command and the saved parameters and to terminate the data transfer; and

a transfer resume step, when continuance of the data transfer is determined by the command decode step, configured to throw the command content of the receive task file register into a command queue, to store command reception response

information into the send FIFO, to send a command reception response packet to the host via the link layer and the physical layer, thereafter to release the suspend of the data transfer and to set the saved parameters to resume the data transfer.

10. (Cancelled)

11. (Previously Presented) The packet transfer method according to claim 9, wherein

the available time generation step includes detecting completion of the transfer of the data packet sent to or received from the host and generating the available time upon detecting the completion.

12. (Original) The packet transfer method according to claim 9, wherein

the transfer resume step includes rewriting the data stored in the send FIFO upon suspending of data transfer into response data to the received command for transfer of a command reception response packet and thereafter setting the saved parameters to resume the data transfer.

13. (Previously Presented) A packet transfer method for a device interface transferring commands and data in packet format by serial transmission between a device and a host, the device interface including:

a receive FIFO configured to store on a first-in first-out basis a command packet or a data packet received from the host;

a command detector configured to detect the command packet stored in the receive FIFO during data transfer and to output a command detection signal;

a receive task file register configured to load the command content of the receive FIFO;

a send task file register configured to load a command or data for packet sending; and

a send FIFO configured to store on a first-in first-out basis the content of the send task file register and to cause a command packet or a data packet to be sent to the host;

the packet transfer method comprising:

an available time generation step generating an available time for receiving another command packet from the host during data transfer; and

a mid-transfer command processing step, when a command packet is received from the host during the available time, suspending the data transfer to decode the received command packet for execution of processing and thereafter to resume the data transfer;

wherein the mid-transfer command processing step comprises:

a suspend processing step, when the command detection signal is output from the command detector for the command packet received during the available

time and stored in the receive FIFO, configured to suspend the currently executed data transfer and to save parameters upon the suspension into a memory;

a command decode step configured to decode the command content loaded from the receive FIFO into the receive task file register;

a data transfer abort step, when abortion of the data transfer is determined by the command decode step, configured to discard the currently executed command and the saved parameters and to terminate the data transfer; and

a transfer resume step, when continuance of the data transfer is determined by the command decode step, configured to throw the command content of the receive task file register into a command queue, to store command reception response information into the send FIFO, to send a command reception response packet to the host, thereafter to release the suspend of the data transfer and to set the saved parameters to resume the data transfer.

14. (Cancelled)

15. (Previously Presented) The packet transfer method according to claim 13, wherein

the available time generation step includes detecting completion of the transfer of the data packet sent to or received from the host and generating the available time upon detecting the completion.

16. (Original) The packet transfer method according to claim 13,  
wherein

the transfer resume step includes rewriting the data stored in the send FIFO upon suspending of data transfer into response data to the received command for transfer of a command reception response packet, and thereafter setting the saved parameters to resume the data transfer.

17-34. (Cancelled)